36. A cell or tissue collection medium, wherein the cells or tissue contained in the medium can be analyzed directly by both cytological and molecular methods, wherein the molecular method of analysis comprises either RNA or DNA or protein analysis or the analysis of both RNA and DNA, and wherein the medium is water based and comprises an alcohol, a cross-linking agent and an anti-degradation agent, and wherein the cross-linking agent is an aldehyde comprising about 1% to about 15% of the medium.

37. A cell or tissue collection medium, wherein the cells or tissue contained in the medium can be analyzed directly by both cytological and molecular methods, wherein the molecular method of analysis comprises either RNA or DNA or protein analysis or the analysis of both RNA and DNA, and wherein the medium is water based and comprises a preservative, a cross-linking agent and an anti-degradation agent, and wherein the cross-linking agent is an aldehyde comprising about 1% to about 10% of the medium.

38. The medium of claim 36 or 37, wherein the cross-linking agent comprises about 1% to about 5% of the medium.

39. The medium of claim 36 or 37, wherein the medium consists of a volume of less than 10 ml.

40. The medium of claim 36 or 37, wherein the medium consists of a volume of less than about 5 ml.

41. The medium of claim 36 or 37, where in the medium consists of a volume of less than about 2 ml.

42. The medium of claim 36 or 37 wherein the medium comprises a buffer component, at least one alcohol component, a cross-linking agent and an agent to inhibit degradation of at least one of the group consisting of RNA, DNA, and protein.

43. The medium of claim 42, wherein the buffer component has a buffering capacity within a pH range of about 2.5 to about 6.

44. The medium of claim 43, wherein the buffer component has a buffering capacity within a pH range of about 3 to about 5.

45. The medium of claim 44, wherein the buffer component has a buffering capacity within a pH range of about 3.5 to about 4.5.

46. The medium of claim 42, wherein the alcohol component comprises a C1 to C10 alcohol.

47. The medium of claim 46, wherein the alcohol component is selected from the group consisting of methanol, ethanol, propanols, butanols, and pentanols.

48. The medium of claim 47, wherein the alcohol component comprises ethanol or n-butanol.

49. The medium of claim 42, wherein the cross-linking agent is selected from the group consisting of formaldehyde and glutaraldehyde.

50. The medium of claim 49, wherein the cross-linking agent comprises glutaraldehyde-bisulfite.

51. The medium of claim 42, wherein the agent to inhibit degradation of at least one of the group consisting of RNA, DNA, and protein comprises at least one agent selected from the group consisting of a nuclease inhibitor, a protease inhibitor and a chelating agent.

52. The medium of claim 51, wherein the agent to inhibit degradation of at

least one of the group consisting of RNA, DNA, and protein comprises a chelating agent.

53. The medium of claim 52, wherein the chelating agent is selected from the group consisting of murexide, chromotropic acid, 1-(1-hydroxy-2-napththylazo-2-hydroxy-5-nitronaphthalene-4-sulphonic acid, EDTA (ethylenediaminetetraacetic acid), *o*-phenanthroline, and thiourea.

54. The medium of claim 53, wherein the chelating agent comprises ethylenediaminetetraacetic acid.

55. A method of performing morphological and biochemical analysis on a cell or tissue, wherein the method comprises:

obtaining a preserved cell or tissue, wherein the preserved cell or tissue is in a water-based medium comprising an alcohol, a cross-linking agent and an anti-degradation agent, and wherein the cross-linking agent is an aldehyde comprising about 1% to about 15% of the medium;

directly analyzing the morphology of the cell or tissue preserved in the medium; and

directly analyzing RNA or DNA or protein contained in the cell or tissue preserved in the medium.

56. A method of performing morphological and biochemical analysis on a cell or tissue, wherein the method comprises:

obtaining preserved a cell or tissue, wherein the preserved cell or tissue is in a water-based medium comprising a preservative, a cross-linking agent and an anti-degradation agent, and wherein the cross-linking agent is an aldehyde comprising about 1% to about 10% of the medium;

directly analyzing the morphology of the cell or tissue preserved in the medium; and

directly analyzing RNA or DNA or protein contained in the cell or tissue preserved in the medium.

57. The method of claim 55 or 56, wherein the cross-linking agent comprises about 1% to about 5% of the medium.

58. A collection medium comprising water, an alcohol, a buffer, a cross-linking agent and an antidegradation agent selected from the group consisting of RNA antidegradation agent, DNA antidegradation agent, and protein antidegradation agent, wherein the cross-linking agent is an aldehyde comprising about 1% to about 15% of the medium.

59. A collection medium comprising water, a preserving agent, a buffer, a cross-linking agent and an antidegradation agent selected from the group consisting of RNA antidegradation agent, DNA antidegradation agent, and protein antidegradation agent, wherein the cross-linking agent is an aldehyde comprising about 1% to about 10% of the medium.

60. The medium of claim 58 or 59, wherein the cross-linking agent is selected from the group consisting of formaldehyde and glutaraldehyde.

61. The medium of claim 58 or 59, wherein the cross-linking agent comprises about 1% to about 5% of the medium.

62. An article of manufacture for preserving a cell sample comprising a container containing the medium according to claim 58 or 59 and a lid fitting said container.

63. The article of manufacture of claim 62, wherein the volume of the medium is less than 2 ml.

64. The article of manufacture of claim 63, further comprising a cell collecting device having an elongated member wherein a distal end of the elongated member has a non-absorbent increased surface area.

65. The article of manufacture of claim 64, wherein the distal end of the

elongated member is a brush.

66. The article of manufacture according to claim 62, wherein the article of manufacture contains a mammalian cell.

67. The article of claim 62, wherein the cross-linking agent is selected from the group consisting of formaldehyde and glutaraldehyde.

68. A method of cell sample collection that allows detection of cell morphology and quantitative analysis of at least one of the group consisting of RNA, DNA, protein, and carbohydrate from a single sample, said method comprising

obtaining preserved cells or tissues from a patient, wherein the preserved cells or tissue are in the medium according to claim 58 or 59;

removing an aliquot of cells from the medium for cell morphology analysis; and

removing an aliquot of cells from the medium for a quantitative analysis selected from the group consisting of DNA analysis, RNA analysis, protein analysis and carbohydrate analysis.

69. The method of claim 68, wherein the quantitative analysis is selected from the group consisting of DNA analysis and RNA analysis.

70. The method of claim 68, wherein the cells are stored in a sample of less than 10 ml.

71. The method of claim 68, wherein the cells are stored in a sample of less than about 5 ml.

72. The method of claim 68, wherein the cells are stored in a sample of less than about 2 ml.